155-3 THE PRESENT

Living in places where nothing is connected properly,
we have forgotten that connections are important.
James Howard Kunstler
The Geography of Nowhere

Part Two portrayed our first three centuries on these shores as a period of disrespect for the landscape and scant concern to the needs of the future. But it also revealed a brighter imperative in our history: times when we acted on our responsibility towards the inanimate land and water, respected our commonality with the creatures which co-habited it with us, and honored obligations to those who would follow. Where has this mixed record of our long march across the landscape brought us? What are the problems facing greenspace today?

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3-1 Greenspace Erosion

Three dynamics are affecting greenspace today: *consumption*--we are using the landscape up at an increasing rate; *fragmentation*--we are cutting up the natural landscape in an alarmingly unplanned and uncoordinated manner, with unknown consequences; and *endangerment of critical areas*--we continue to threaten critical areas without sensitivity to their natural and cultural values. In sum, these trends amount to a loss of connections: a severing of the natural connections that stitch the landscape's ecological systems together, and a breaking of our ties to the land.

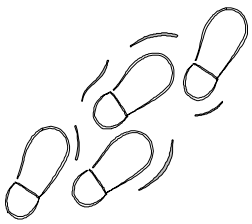
3-1-1 Consumption

We're gonna' use it up and wear it out;
ain't noth'in in this ol' world that I care about.
Pat and Mick, © PWL Records, 1990

As a micro-state, consumption of land is something that Rhode Island must be continually aware of. Once our precious 1,000 or so square miles are gone--committed permanently and irretrievably--the jig, as the saying goes, is up. How far along that continuum are we? How heavily have our footsteps tread on the land?

Leave only Footprints.....

Most Rhode Islanders have walked along one or two of the Ocean State's beaches in their lives. The reality of our collective tread on the landscape is quite different from the comforting image of vanishing footprints in the sand: imagine leaving behind a footprint about 50 feet wide and 160 feet long. Each Rhode Islander, just over a million of us at present, has a "developed land" footprint of that size--his or her proportionate share of our developed landscape.



Each step embraces the good, the bad and the ugly of our built world: from the most elegant historic home to the crassest commercial strip, the up-scale "executive" sub-division to the blighted urban tenement.

Save for the extinction of a precariously-sited beach house now and then, the incoming tide does not erase this evidence of our long trek. Our mark on the land continues to grow: in 1960, each of our footprints was about 40 by 150 feet, and there were 150,000 fewer of them. By 2010, unless we do better in guiding and concentrating growth, each Rhode Islander's footprint on the land will measure 75 by 175 feet, and there will be 55,000 more of them than there are today.

Our land is about one-quarter gone. While, at one time or another and in one way or another, we've altered just about all of Rhode Island's land, we've consumed--physically occupied with structures and pavement--just about 25 percent of the state's land area[1].

While a quarter of the state developed may seem an amazingly small "footprint" from more than three centuries of European occupancy, consider what that means: during our tenure as stewards, we've been twice as effective at using up land as we have at saving it (recalling the 13 percent "protected open space" statistic from Part Two). This is quite a departure from the land used/land preserved ratios of the previous "tenants"-- the Narragansetts, Wampanoags, and other Native American tribes.

Consider also that the 25 percent figure excludes an additional quantity of land (perhaps another 4-5 percent), mostly the large lots associated with the very low density residential development that has proliferated in rural parts of the state in recent years. While "undeveloped," this land is very much "committed" to developed use.

Even if we've "committed" nearly one-third of our landscape to developed uses, that leaves two-thirds of the state as raw land. True, but consider, most significantly that land consumption is accelerating. Between 1636, when European settlement began, and 1960, Rhode Island urbanized just under 20 percent of its land, an average rate of 6.2 percent per century. During the last generation--1960 to 1990--however, development proceeded at a per-century rate of 11.6 percent--nearly double the long-term average[2].

The threat to greenspace lies not in the time-honored patterns of using land that brought us most of the way to the contemporary landscape, but rather in the continued pursuit of the land use trends of the last generation. During that period, we developed an amazing zeal for equating better with bigger when it comes to land use, translating into an ever increasing scale of development, quantity of land consumed, and toll on the landscape. The price of engaging in everyday activities such as working and shopping, in land consumed, grows higher each year.

Think about the changes the last generation has witnessed in the sheer scale of common land uses:

- Supermarkets, originally 10,000-20,000 square-foot emporiums (considered spacious and modern when they replaced the 2,000 square-foot corner market in the 1950s and 1960s), now are functionally obsolete unless they cover several football fields and stock everything from arugula to antifreeze.

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1 Data from RIGIS, Landuse/landcover dataset, based upon 1988 aerial photography.

2 This analysis is based on figures in the 1975 State Land Use Plan and the RIGIS Landuse/landcover dataset. The 1960-90 rate estimate is conservative because the 1988 aerial survey counted undeveloped portions of large residential lots committed to low density residential usage as undeveloped land. If these "undeveloped" but commited areas were counted as "consumed", the land consumption rate of the last generation would likely be more than double the historic average.)

- In like vein, the department store--the venerable, multi-storied downtown flagship--was first replicated as single-floored suburban plaza anchors, and later became part of the malls that functionally supplanted downtowns as our marketplaces. Today, the new retailing phenomena is the differentiated, or specialty superstore: we have electronics superstores, discount clothing superstores, office supply superstores, hardware superstores, and sporting goods superstores. What the department store brought together under one roof is now spread out under a proliferation of roofs--each taking a bigger chunk out of the landscape than all but the largest of their predecessors. As our retailing options expanded, each increment of space consumed undoubtedly added to our choice and convenience as consumers, and to the gross domestic and state products; but each leap forward has also had consequences for the landscape and our greenspace.

- Our workplaces have also fundamentally changed, as the territorial imperative affected industrial land usage. Employment density ratios, commonly twenty to thirty or more employees per acre in old manufacturing districts, have dropped to an average of fewer than ten employees per acre as factories have gone from multi-to single-storied affairs, and have occupied more spacious sites.

- Our contemporary "neighborhoods"--if fifty homes strung out along ten miles of rural road can be called a neighborhood--reflect the dispersion process carried to extreme in the spaces we need to live. New residential development at the densities and specifications that gave us such endearing traditional neighborhoods as Providence's Benefit Street, Pawtucket's Quality Hill, and East Greenwich's Hill and Harbor is now illegal in most of the state.

For better than a generation, we have embraced spaciousness as an unspoken national goal. We *needed* more space: the American Dream required it--bigger houses on bigger lots to accommodate our acquisitive lifestyles; wider highways carrying faster cars to satiate our desire for mobility and speed; a proliferation of stores to maximize our craving for convenience and choice. In a headlong rush to spread ourselves diffusely across the land we never paused sufficiently to contemplate the implications such patterns would have for our landscape or for our lives. Instead, we reticently accepted sweeping changes in how we use land and how we relate to the landscape, and restructured our lives to accommodate the new patterns. Only now are we beginning to question the effects of our space-hungry postwar growth. We wonder: Are the patterns efficient? Are they sustainable? What have we given up in trade? Are we better off, other than materially, than we were before?

3-1-2 Fragmentation

All the King's horses and all the King's men couldn't put Humpty together again.

Although, in aggregate, undeveloped open land in Rhode Island remains substantial, the way in which we use land is fragmenting and compartmentalizing the natural landscape. This poses an increasing threat to the values greenspace provides. By plunking development down without adequate consideration to the integrity and dynamics of natural systems, we are chopping the landscape into smaller and smaller pieces, and severing the invisible links which bind ecosystems together and allow them to function.

Figure 155-3(1)
Developed Land

Figure 155-3(1) illustrates the permeation of development throughout the state. The "buckshot" distribution of development and the resulting fragmentation of open space are plainly evident, notably in western and southern Rhode Island. The visual image is supported by recent research at the University of Rhode Island's Department of Natural Resource Science, which has found that over one third of Rhode Island's forests are edged or bordered by urban or heavily disturbed land types (residential, commercial, farming), and that Rhode Island's landscape is approaching the threshold between one in which natural landcovers predominate to one in which managed and disturbed landcovers are dominant[3].

A buckshot scattering of development is fragmenting Rhode Island's rural landscape.

[3] August. P. V. *The Changing Rhode Island Landscape and the Need for Ecological Monitoring*. Paper presented at Conference on Rhode Island Natural History survey. Providence. April, 1993.

Statistics on forest ownership collected by the U.S. Forest Service also confirm the portrait of an increasingly divided landscape. In 1972, there were 14,200 private forest landowners in the state. Less than half (some 6,700) of these held forest parcels smaller than ten acres in size. By 1984, a mere 12 years later, the number of forest landowners had more than doubled to 32,800; and the number of landowners holding tracts less than ten acres had nearly quadrupled to 26,200.

While such "democratization" of land ownership has undeniable social benefits, it represents a tremendous loss of security that the resources embodied in our forests will remain forever safe and available. Resource management and protection becomes a much bigger job: where twenty years ago a 10,000-acre aquifer might have been covered by fewer than a hundred large farms and woodlots posing little threat; today, divided and developed under large-lot zoning (intended to protect it from "intensive" development), it might accommodate a thousand homes and septic tanks, a hundred or more commercial and industrial establishments, and roads connecting them all. This multiplication of potential pollutant sources, must now be managed by "someone", if the viability and quality of the aquifer is to be assured.

As the natural landscape is broken into smaller and smaller pieces by development that disrupts the integrity of natural systems, the habitat and territorial needs of some species may no longer be met. Routes to water or food sources may be cut off, or a major highway may separate breeding populations. Some songbird species require unbroken forest habitat of 500 acres or more in size, and will not cross major breaks in the forest canopy such as created by a four-lane highway right-of-way. As housing tracts and roads pierce and open the forest canopy, susceptible populations, crowded and stressed, will decline. Other, more adaptable, species will fill their niche; but the forest will have lost diversity.

We know too little about how far the disturbances of adjoining developed land uses penetrate into forests and what effect, in aggregate, they are having on ecological processes; and it should give us great pause, to realize that we are dividing up the landscape on a grand scale, changing the dynamics of natural systems *willy-nilly*, while actually knowing very little about the specific habitat needs of many species, or the potential effects of our actions. A 1993 symposium, organizing a Rhode Island Natural History Survey, illuminated the paucity of our understanding. Phrases such as: "knowledge is sparse," "our understanding is poor," and "wide gaps in our knowledge" peppered the talks of biologist/ecologist presenters.

If we continue on the present

Bit-by-bit, we continue to fragment the natural landscape of Rhode Island while actually knowing little about the long-term effects.

path, the development pattern we will permanently enshrine in much of Rhode Island will be a diffuse amalgam of low to very low density residential development, broken occasionally by broad swaths of jumbled commercial and other uses strung along Interstate and arterial highways. Under this "vision" for the future landscape, there will be lots of "greenspace", but it will be in people's backyards--carved into two-to-five acre homesites. Such fragmentation will make protection of the social values and interests embodied in the state's greenspace a virtual impossibility.

3-1-3 Endangerment of Critical Areas

The most immediate threat to critical greenspace lies in our failure to take full measure of the public interest and values embodied in it. The prevailing, economic allocation of the landscape too often promotes development in precisely the spots that a public-interest, resource-based valuation would require avoiding. Developing these "wrong" places endangers the very resources that we profess to treasure and that support the fundamental values of greenspace.

"A home in the country.... Beachfront... Ocean view... Good country air... Woodland estate..." The real estate advertisements capture as selling points the very natural and cultural features that development imperils. As improvements in transportation and communication have facilitated a diffusion of population and commerce across the state's landscape, more and more important greenspaces are threatened.

Three resources typify the plight facing critical greenspace throughout Rhode Island:

❖ *The Shoreline*

Everyone loves the coast. Nationally, the coastal zone has been attracting population like lemmings to the sea: 40 percent of the nation's population now lives in coastal counties, and 75 percent live within 50 miles of tidal waters and the Great Lakes. Rhode Island's coastal zone is no exception to this trend. In the 1980s, the growth rate of Rhode Island's 21 coastal communities was nearly twice that of the state as a whole, and the least developed coastal towns (those with less than 10,000 population in 1980) grew at nearly four times the statewide rate. In 1990, nearly one third of the state's population lived in census tracts contiguous to the Rhode Island coastline.

The allure of life by the sea causes us to imprudently set our dwellings on shifting sands, sometimes with catastrophic result.

Our loving embrace of coastal greenspace has a price: as we crowd the shore, replacing natural vegetation with structures and pavement, we alter natural systems, increase pollutants and nutrients draining into coastal waters, and decrease the assimilative capacities of wetlands and natural shoreline buffers. The impacts, obvious for years in urbanized areas, are increasingly affecting other, previously pristine, coastal areas. Like the sentinel canary in a coal mine, Rhode Island's iconic crustacean, the quahog, is signaling the impact of our rush to the shore. Over 1,200 acres of Rhode Island's salt ponds, tidal rivers, and embayments are permanently closed to shellfishing because of pollution[4]. In addition to the urbanized upper portion of Narragansett Bay, which has been closed for decades, other, once clean, coastal estuaries have witnessed dramatic residential development along their shores in recent years, and are now showing distressing signs of degradation. Within the past five years, Narrow River and Greenwich Cove have had permanent bans imposed on the taking of shellfish. Other coastal waters threaten to follow suit.

South County's coastal pond region encompasses six major coastal ponds and lands within the ponds' watersheds, south of the glacial moraine that stretches across the state's southern fringe. The resources of this area are crucial to the fisheries, recreation, and tourism that are central to the economy and lifestyle of the region. The aquifers that feed the ponds are also the source of the region's drinking water. The area's allure, however, may also be its undoing: despite having extremely limited wastewater treatment facilities, the salt pond region witnessed a threefold increase in dwellings between 1950 and 1980; and, based on zoning in place, a second tripling of dwelling units and a seven to nine-fold increase in population could readily occur[5]. One has to wonder whether this region--which for generations has epitomized the idyllic life along Rhode Island's seacoast--will be recognizable after another generation of such growth. Will tourists still come?

❖ *Watersheds and Aquifers*

As people and commerce relocate away from Rhode Island's cities and established suburbs, they are increasingly encroaching upon resource lands critical to the state's drinking water supplies. Growth, with its attendant threat of pollution, is occurring in watersheds and over aquifers around the state.

Sizable areas of the state, including the Wood-Pawcatuck Basin, Block Island, and the Hunt River Basin, rely upon a single groundwater source--there is no readily available alternative to replace these "sole-source aquifers" if they are contaminated. These and many of the state's other high-yield-potential aquifers are currently high quality by virtue

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4 Narragansett Bay Project, Rhode Island Department of Environmental Management and Division of Planning, Rhode Island Department of Administration. *Comprehensive Conservation and Managment Plan for Narragansett Bay*. 1992. p. 4.78.

5 R.I. Coastal Resources Center. *Rhode Island's Salt Pond Region: A Special Area Management Plan.* 1984. p. 3.

of the sparse development overlying them. They are susceptible, however, to future land use-related degradation; and, as the recent aquifer contamination crises in Westerly and North Kingstown demonstrated, even one contamination incident can have far-reaching and potentially devastating consequences for public water supplies. With the exception of the Big River and upper Wood River aquifers, very small portions of the state's major aquifers are in public ownership. Prevention of land use impacts on water quality rests, largely, with local governments.

Surface drinking water resources are also at acute risk: only 17 percent of Rhode Island's public drinking water supply watersheds and aquifers are protected via public ownership and management. The management plan for the Scituate Reservoir Watershed, the source of drinking water for over half of Rhode Island's population, found towns in the watershed to be growing at a rate eight times the state average[6]. Newport's reservoirs on Aquidneck Island are similarly threatened by commercial and residential development and by agricultural runoff in the stream valleys that feed and connect them. The water used by Woonsocket residents flows an exposed gauntlet beside car dealerships and under major highways before it reaches their lips. Raw water from Pawtucket's system travels eight miles through a stream draining a watershed that suburbanized dramatically in the 1970s and 1980s.

The Scituate Watershed Plan and the protection plans now being developed for other public watersheds in the state are documenting the vulnerability of our public water supplies and recommending steps to safeguard them. These plans, and a growing number of contamination incidents, are making it clear that, as forests fall to subdivisions and farms succumb to retail strips, the public lands protecting our water supplies are an increasingly thin and vulnerable green line.

❖ *Farmland*

Productive agricultural land, for a number of reasons, remains in steep decline throughout the state. Eking out a livelihood from the state's bony soils has never been easy, and being a farmer today in Rhode Island is, in many ways, a punishing and thankless job. The economics are not good: dairy farming has all but vanished, and the fortunes of nurseries and turf farms, which rode high during the 1980s boom, have suffered with the 1990s' decline in construction

According to the New England Agricultural Statistics Service, Rhode Island lost 7,000 acres of farmland since 1990. The state's Agricultural Preservation program saved 2,500 acres over the last 10 years.

6 Division of Planning, R.I. Dept. of Administration, Scituate Reservoir Watershed Management Plan, 1990, p.1.5.

activity. The continuity of many traditional family farms is imperiled. The farm may falter because there is no heir desirous of carrying on the farming tradition. Even when there is a will, there may be no way: in situations where no family financial planning has been done, the death of the patriarch may necessitate selling the family's land to settle an estate and pay taxes. After years of hard toil, and with no economic security for old age, save their land, a good many Rhode Island farmers found the fantastic sums proffered by developers during the 1980s boom times impossible to resist.

The problem of farmland loss is not new: the 1981 Report of the Governor's Agricultural Land Preservation Task Force found that Rhode Island had lost over 90 percent of its farmland by 1980. To counter this trend, the report suggested a target of doubling the land in farms from 60,000 to 125,000 acres over twenty to thirty years, and recommended a number of specific initiatives. The Agricultural Land Preservation Commission, created in response to the Task Force's report, has used $12 million authorized by the state's voters to purchase development rights to over 2,500 farm acres during the last decade. Despite the Commission's best efforts, the downward trend has not been stemmed. A recent estimate found that the state lost 7,000 acres of farmland since 1990[7].

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The shoreline, water resource lands, and farmland are just three of the greenspace resources that are threatened by the very love we profess for amenities they add to our lives. Similar sagas could be told of the effects our commercial strips, housing, and highways are having on our scenic landscapes, forests, rare plants and animals, and historic areas.

3-2 Losing Our Connections

Taken together, recent trends in how we use land and divide up the landscape have weakened the characteristically strong bonds Rhode Islanders have with the state's land and water, and lessened opportunities for future Rhode Islanders to experience the outdoors as we have. Less tangible than the extinction of a species or pollution of a reservoir, but nonetheless real, is loss of our opportunities to connect to greenspace.

Loss and fragmentation of large greenspace tracts are diminishing opportunities for hunting and other forms of recreation that require access to large tracts of land. Our continued enjoyment of linear recreation pursuits such as hiking and horseback riding, traditionally dependent upon the countenance by private owners of public passage across their large tracts, is similarly threatened. One ill-placed development project can permanently sever the continuity of a long-used trail corridor.

The changed landscape has also changed the nature of our relationship with the shoreline. Using the shoreline--often without regard to who owned the upland transited to get to it--is a time-

7 New England Agricultural Statistics Service. *New England Agricultural Statistics, 1991.* P. 5

honored Rhode Island custom. But, as coastal farms have given way to subdivisions and condominiums, access enjoyed by the public for generations through the hospitality of landowners has been replaced by "No Trespassing" and "Private Road" signs. Many of the expansive views of farms sweeping down to the ocean, formerly enjoyed for the price of a drive along the coast road, are also gone.

The direct losses are easy to see and appreciate--we all know of special places lost--a trail blocked by condos, a farm gone to subdivision, or woodland turned mini-mall. But other changes are occurring. As suburban development patterns and styles have spread through the state, our landscape has become less diverse. Our mental maps of what is "city" and what is "country" are increasingly indistinct and fuzzy. This town looks like that town; this strip like all the others. Natural landmarks--a peculiar rock outcropping, champion tree, or roadside spring--once offered visual bearings, a sense of comfortable familiarity, to our communities and our journeys. But many such landscape icons have disappeared, or been so thoroughly surrounded and isolated by large-scale development that they are lost to us.

The loss of such cognitive features is significant because so much of Rhode Islanders' experience of greenspace is visual: they know and love the state from years of driving through its familiar landmarks. Indeed, driving for pleasure is the third most popular outdoor recreational activity, engaged in by 60 percent of Rhode Islanders[8].

As development has spread to rural parts of the state, changes in the landscape have altered the character of such basic outdoor recreation traditions as the pleasurable "drive in the country." Many rural roads, which once held forth visions of expansive farm fields and forests around every bend, are now lined with houses. Rather than develop chunks of land, and keep the view from the road intact, we've strung out our new homes along existing roads because it is easier and cheaper (in the short run) than concentrating them. The very "feel" of back roads has changed as they've been upgraded in response to increased traffic and safety concerns. Those country roads whose twisting and hummocky course and sparse traffic invite a dallied pace and a chance to absorb the passing view are becoming harder and harder to find.

If we allow our greenspace resources to continue to be excessively consumed, fragmented, and endangered by development, the character of our relationship with the land will continue to change. We need to consider carefully if some of the problems besetting our society today do not, at least in small measure, stem from the silent severing of our bonds to the land and to distancing ourselves from nature.

8 Rhode Island Division of Planning and R.I. Department of Environmental Management. *Ocean State Outdoor: Rhode Island's Comprehensive Outdoor Recreation Plan.* 1992. p. 4.9.

Today, as the third millennium approaches, we should consider our relationship with the land. Our technology now convenes absolute power over the landscape upon us. We can level hills, move rivers, topple forests as suits our whim. Our knowledge has also grown, however, increasing--perhaps in the nick of time--to reveal the breadth of interrelationships we have with greenspace, and myriad dependencies we have upon it. With better understanding has come the realization that our environmental tampering has the potential to fundamentally, perhaps irreparably, harm our vital interests.

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